

THURSDAY, APRIL 2, 1874

MARY SOMERVILLE

Personal Recollections, from Early Life to Old Age, of Mary Somerville, with Selections from her Correspondence. By her daughter, Martha Somerville. (London: John Murray, Albemarle Street, 1873.)

IT would have been a lasting blot upon the biographers of our time if such an illustrious woman as Mary Somerville—a woman unique, or almost unique from one point of view, though so beautifully womanly from others—had been allowed to pass from among us without a satisfactory memorial of her characteristic thoughts, conversation, and domestic life.

The "Personal Recollections of Mary Somerville" will not satisfy those readers who may have hoped to find in the autobiography of the author of the "Mechanism of the Heavens" and the "Connection of the Physical Sciences" any special expositions of Science or practical hints for a successful method of scientific training. The studied care with which Mrs. Somerville avoided bringing scientific questions prominently forward in conversation has been rigidly preserved in the story of her life, where little or nothing is said of the processes by which she attained so exceptional and distinguished a place in the world of Science, and only passing references are made to the extraordinary success that attended her self-acquired knowledge.

As the record of a life in which the fulfilment of all the natural and conventional claims upon a woman's time was combined with practical and theoretical pre-eminence in the most abstruse departments of physical inquiry, no book can, however, be more interesting and suggestive than this volume, in which the personal recollections of Mary Somerville are noted down for us by her own hand and that of her daughter. The story of her life has, moreover, the special interest that it may, with perhaps equal justice, be made to yield arguments for and against the claims advanced for women's equality to men in intellectual capacity. The champions of such pretensions may well point with triumph to her achievements in the higher branches of analytical geometry. Where, indeed, could another instance be found of a person who, after having had to ask, at the age of 16, the meaning of "the x 's and y 's mixed with strange lines," which first excited her notice in the pages of a magazine of fashion, should unaided—for she was in all essentials a self-taught mathematician—have been able to begin her career as an author by producing a work like the "Mechanism of the Heavens," which still ranks as the best exposition that we possess of Laplace's "Mécanique celeste"?

The approval which this work won from the first mathematicians and physicists of the day seems to have surprised no one more thoroughly than the writer herself, who had carried on her studies with such unostentatious industry within her own home, that she was scarcely conscious how exceptional were her attainments. And it may be fairly said of her that by the publication of the "Mechanism of the Heavens," in 1831, she suddenly awoke, at the advanced age of 51, to find herself famous,

the one woman of her time, and perhaps of all times, for whatever may be the advantages which are now happily being placed within the reach of women for benefiting by high scientific training, we can scarcely expect to meet with many Mary Somervilles. Her genius was unique of its kind, and wholly exceptional, and this fact seems to have been frankly and generously admitted by all who came in contact with her, who were capable of measuring the depths of her knowledge. But so successfully did she conceal her learning under a delicate feminine exterior, a shy manner, and the practical qualities of an efficient mistress of a household, coupled with the graceful, artistic accomplishments of an elegant woman of the world, that ordinary visitors, who had sought her as a prodigy, came away disappointed that she looked and behaved like any other materfamilias, and talked just like other people. No one, therefore, could possibly have afforded a stronger refutation of the axiom, almost universally upheld half a century ago, that scientific acquirements of a high order are wholly incompatible with the proper exercise of the natural and ascribed functions of a woman's destiny. And accordingly the name of Mary Somerville has always been a tower of strength to the promoters of woman's emancipation from the enactments established by man for her exclusion from the enjoyment of the various social, legal, intellectual, and other privileges, of which he has so long had the virtual monopoly.

Her fame did not rest only on her first book—in which she had verified Laplace's own testimony, that she was the only woman who had ever read his works, which, moreover, were not understood by twenty men in France as well as she understood them—for the list of her writings includes, in addition to those more generally known from their semi-popular form as the "Connection of the Physical Sciences," "Physical Geography," &c.; monographs on the Analytical Attraction of Spheroids, the Form and Rotation of the Earth, the Tides of the Ocean and Atmosphere, and, besides many others of equally abstruse nature, a treatise of 246 pages on Curves and Surfaces of the Second and Higher Orders, which she herself tells us she wrote *con amore*, to fill up her morning-hours while spending her winter in Southern Italy. A truly marvellous *catalogue raisonné* of the results of a woman's knowledge and industry!

It is impossible to speak too highly of the sympathy and hearty recognition of the value of her labours that Mrs. Somerville received from all the most eminent of her contemporaries. In France, Laplace, La Croix, Biot Poisson, Arago, Ampère, and many others welcomed her as one of themselves; in England she enjoyed the intimate friendship of the Herschels, Lord Brougham, Professors Whewell, Peacock, Babbage, Sedgwick, and Brewster, and others pre-eminent in science; and surely no greater tribute could have been paid to the exceptional intellectual superiority of Mary Somerville than that rendered by the University of Cambridge when, at the earnest recommendation of Profs. Whewell and Peacock, her "Mechanism of the Heavens" was introduced into the University studies as "essential to those students who aspire to the highest places in the examinations."

It would not be easy to over-estimate the extent and degree in which Mrs. Somerville's acquirements differed from those of women generally at that period; but then

it must be admitted that it is precisely through this exceptional character of her attainments that her case may be adduced in proof of the rule that women are not by nature adapted for studies which involve the higher processes of induction and analysis. If such powers as hers had been more generally granted to women, why is she the only woman on record amongst us who has exhibited them?

There was nothing exceptional in her bringing up, or her opportunities. In fact, no woman of her time and station could have had a more typical experience of life than she had. She was born nearly a century ago, in 1780, and spent her childhood and youth in Scotland, within an ordinary circle of the upper middle-class society of her age and country, and therefore very closely circumscribed by lines of defence against innovations and social changes of any kind. Her father, Captain Fairfax (a brave officer who commanded the *Repulse* during the war), received the news of her having taught herself the first six books of Euclid with the remark—"We must put a stop to this, or we shall have Mary in a strait-jacket one of these days. There was 'X,' who went raving mad about the longitude!" This gallant captain was, moreover, a genuine good Tory, who took decided views in regard to all questions involving a departure from established precedents, and when his young daughter ventured to express her admiration for the short-cut hair, which was then the badge of a Liberal in politics, he exclaimed, "By G—, when a man cuts off his queue the head should go with it." Her mother, who found all her intellectual cravings amply satisfied with the reading of her Bible, a volume of sermons, and a stray copy of a newspaper, fully concurred in her husband's views of the education suited to young women, and was at great pains to thwart her daughter's unladylike taste for pursuits regarded at the time as the exclusive privileges of men, and to keep her mind and hands closely fettered by the bonds of a household possessed of very limited pecuniary means. The parents of the future authoress of the "Connection of the Physical Sciences" did not, therefore, afford her special facilities for mastering any of those higher branches of knowledge for which she seems to have had an instinctive yearning almost before she knew their names. Indeed, at the age of 10, Mary Fairfax was still a little ignorant savage, running wild over the hills and braes of Burntisland, and scarcely knowing her letters; yet before she was 13 she had surreptitiously possessed herself of some of her brother's books and taught herself Latin enough to construe "Caesar's Commentaries." At that time she scarcely knew the simplest processes of arithmetic, but at the age of 17 the possession of a copy of "Bonycastle's Algebra," procured for her by her uncle and future father-in-law, Dr. Sutherland—the only one of her relations who did not absolutely oppose her efforts to acquire knowledge—enabled her to solve the mystery of the X's and Y's; and from that hour till the day of her death, mathematics, in one shape or other, may be said to have formed part of her daily existence. For more than half a century they were the staple occupation of her morning hours when the duties of her house and family had been disposed of; at a very advanced age she began and mastered the study of Quaternions, and other forms of

modern mathematics, and at 89 she "still retained facility in the calculus."

The restless activity of her intellect had indeed never slumbered. When she received her first lessons in painting and music, she had begun at once to try and trace out the scientific principles on which these arts are based, and never rested till she had gained some knowledge of the laws of perspective and of the theory of colour, and had learnt to tune her own instruments. In later years she may be said to have been always in the van of discovery—not indeed as an originator but as the readiest and aptest of students—and from the time when Young showed her how he conducted the experiments by which he claimed to have discovered the undulatory theory of light, and Wollaston made her one of the very first witnesses of the seven dark lines crossing the solar spectrum, whose detection laid the basis of some of the most wonderful cosmical discoveries of this or any age, Mary Somerville, to the last day of her long life of nearly 92 years, followed with quick and appreciative understanding every step in the advance of modern research. Age could not quench the fire of her intellect, and even in her 92nd year, when the Blue Peter, as she quaintly remarks, had long been flying at her foremast, and she had soon to expect the signal for sailing, she could interest herself in the phenomena of volcanic eruption, speculate on their effects, and follow with lively sympathy the progress of scientific inquiry, and the issues of passing events.

In reading the personal recollections of this wonderful woman nothing strikes one more than the ordinary and even commonplace conditions under which her great intellect advanced to maturity. In her case the only exceptional features were her natural gifts and her perseverance in cultivating them; and this is precisely the point that should not be lost sight of. Mary Somerville will always present a noble instance of what a woman has been capable of achieving, but it would be straining the argument too far to say that we are justified from her special case to draw general conclusions in regard to women's aptitude for the study of the higher forms of physical science.

EXTINCT VERTEBRATE FAUNA OF THE UNITED STATES

Contributions to the Extinct Vertebrate Fauna of the Western Territories of the United States. By Prof. Joseph Leidy. (Government Printing Office, Washington.)

THIS important volume is the first of five which are to form the "Report of the United States Geological Survey," and it will be supplemented by a memoir, embracing the same subjects, by Prof. Cope.

The large field for palæontological work recently opened up in the Western Territory of the United States has been as fruitful in the introduction of new and unexpected forms of extinct vertebrate life, as that so ably worked out by Cuvier, the Paris basin. By the establishment of a military station at Fort Bridger, opportunities have been afforded to geologists, which the offensive attitude of the Indian tribes had previously deferred, rendering inaccessible a district, the richness of whose past fauna must have been as remarkable as is its present desolation.